



NATIONAL BOARD OF HEALTH PROJECT ON
MAJOR NONCOMMUNICABLE DISEASES

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Summary

National Board of Health
Project on Major noncommunicable Diseases

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National Board of Health Project on Major noncommunicable Diseases

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1 Introduction

As part of *Healthy throughout Life – the targets and strategies for public health policy of the Government of Denmark, 2002–2010*, the National Board of Health initiated the Project on Major Preventable Diseases and Disorders in 2003. The purpose of the Project is to recommend initiatives that can prevent disease and promote health by integrating measures carried out in Denmark's health care system intended to prevent disease and promote health and measures intended to treat disease.

Healthy throughout Life focuses on eight groups of major preventable diseases and disorders: type 2 diabetes mellitus, preventable cancer, cardiovascular diseases, osteoporosis, musculoskeletal disorders, hypersensitivity disorders (asthma and allergy), mental disorders and chronic obstructive pulmonary disease (COPD). Nearly all these diseases and disorders can be avoided completely or in part through measures to prevent disease and promote health and can be limited in their development and effects if they have started.

The overall aims of the Project on Major Preventable Diseases and Disorders are:

- to develop and strengthen the systematic prevention of the eight major preventable diseases and disorders; and
- to contribute to systematically integrating disease prevention and health promotion into the treatment efforts of the health care system.

The objectives of the Project are:

- to prepare a catalogue of ideas with proposals for specific measures to prevent disease and promote health within the health care system;
- to develop the work of the National Board of Health on preventing disease and promoting health in the health care system by engaging in dialogue with health care stakeholders and resource people; and
- to make the National Board of Health more visible as an active part of the efforts to prevent the major preventable diseases and disorders.

This summary is an abridged version of *Folkesygdomsprojektets Idékatalog* (Catalogue of Ideas of the Project on Major Preventable Diseases and Disorders). It introduces the nine projects of the Catalogue. Further, this summary is intended to inspire professionals who work with disease prevention and health promotion within the health care system.

1.1 The projects of the Catalogue of Ideas

The Catalogue includes nine subprojects focusing on the following themes.

1. Self-management – documentation

Four literature reviews will be carried out on the following topics: the concept of self-management, patient schools, lifestyle counselling in general practice and home visits. The aim is to describe the existing evidence base for the work with self-management and methods that are often used to promote self-management. The results will be disseminated through reports and a symposium for health professionals, respectively. A small expert group comprising researchers and practitioners in this field is attached to the subproject.

2. Promoting health and preventing disease in general practice – materials, education and training

Inspirational material is being prepared with good examples that provide ideas and specific advice to the general practitioners who want to work more systematically

to prevent disease and promote health. The material is disseminated through regional meetings, and a strategy is being prepared to achieve visibility among the public. Further, eight patient-oriented brochures are being published, one on each major preventable disease or disorder, and efforts are being made to improve the qualifications of practitioners in preventing disease and promoting health. A working group is attached to the subproject.

3. National recommendations for the early detection of COPD and for pulmonary rehabilitation – guidelines and manuals

Guidelines on and a plan and models for implementing the early detection and follow-up of COPD and pulmonary rehabilitation are being prepared. The guidelines and other material are being presented at three to five regional seminars for health care professionals. These are being bolstered by preparing and disseminating differentiated manuals for detecting COPD and following up and rehabilitating COPD patients. A working group is attached to the subproject.

4. Systematic comprehensive cardiac rehabilitation – guidelines

Guidelines have been prepared for hospitals containing information about rehabilitation. The guidelines were published at a conference for staff in regions, municipalities and hospitals and for general practitioners in October 2004.

5. National recommendations to prevent falls and bone fractures among elderly people – guidelines

National guidelines are being prepared for efforts at hospitals to prevent falls among people who attend a hospital accident and emergency department or are admitted to hospital after a fall. The guidelines will include recommendations on screening, investigation and relevant interventions. The guidelines will be presented at a conference that also focuses on creating coherence between the efforts at hospitals and follow-up after discharge.

6. Musculoskeletal disorders

An educational programme is being developed and tested in which patients take on the role of expert patients and teach other patients how to self-manage their disorders. The model is being tested in cooperation with Ribe County, Copenhagen County and the Danish Rheumatism Association and is being evaluated for its suitability for being transferred to the other major preventable diseases and disorders.

7. National strategy for the early detection and preventive treatment of hypersensitivity disorders

National guidelines are being prepared for the early detection and prevention of hypersensitivity disorders (asthma and allergy) and the rehabilitation of patients with these disorders. Further, various models are being described for organizing the early detection and prevention of hypersensitivity disorders, emphasizing the critical pathways to integrated care and disease prevention and cooperation between primary and secondary health care. Educational material and indicators are being prepared in this field.

8. Physical activity in hospitals – pilot projects at departments of psychiatry

Tools and indicators are being developed and tested for organizing the physical activity of patients during admission to departments of psychiatry in hospitals and after discharge. The model tested will be evaluated with the aim of contributing to implementing physical activity in the entire hospital system.

9. Including physical inactivity and inadequate diet as risk factors for illness in patient registration

National standards are being developed for providing structured information to patients on risk factors for illness, including physical inactivity and inadequate diet. Efforts will be made to integrate risk factors for illness as a requirement in patient registration.

The first five subprojects cover the prevention and early detection of cardiovascular diseases and the rehabilitation of patients who have cardiovascular diseases, type 2 diabetes, osteoporosis and COPD as well as promoting intersectoral efforts within the health care system. The last four subprojects include early detection, patient education, management of risk factors for illness and pilot projects in relation to musculoskeletal disorders, mental disorders, hypersensitivity disorders and preventable cancer.

All subprojects are related to the work carried out in the primary and secondary health care sectors and include primary, secondary and tertiary prevention. The efforts target the various phases in the life-course based on the individual disease or disorder: from healthy people at elevated risk to people who are ill.

The primary role of the National Board of Health in the subprojects is to facilitate, initiate, coordinate and provide documentation.

1.2 Developing ideas related to the major preventable diseases and disorders

The work with the Catalogue's subprojects is based on three elements:

1. describing the critical pathways for public health policy;
2. documenting the evidence related to selected methods; and
3. engaging in dialogue with stakeholders on the subprojects.

1. Describing the critical pathways for public health policy

The critical pathways for public health policy have been described for each of the eight major preventable diseases and disorders to determine the overall potential to integrate preventing disease and promoting health into the treatment of these diseases and disorders. The model for describing the critical pathways for public health policy has been inspired by the approach of focusing on the critical pathways for the clinical care of each individual patient and has been constructed with the purpose of being able to structure the work in the Project on Major Preventable Diseases and Disorders. Although focusing on critical pathways for clinical care is primarily related to the clinical efforts of the health care system and coordinating these, the perspective here is expanded since it is based on the phases of the overall life-course: from healthy people at elevated risk to patients who are in various stages of illness. This perspective thus focuses more on public health policy than on an individual clinical perspective on critical pathways.

2. Documenting the evidence related to selected methods

Descriptions and documentation for the topics have been prepared that focus on the nature of the intervention and the effect of the method to support the selection of specific projects.

3. Engaging in dialogue with stakeholders on the subprojects

To prepare subprojects that can contribute to fulfilling the objectives of the Project on Major Preventable Diseases and Disorders, the Project Group has engaged in dialogue with numerous health professional stakeholders and resource people who have provided important contributions in such forms as contacts, knowledge and specific suggestions for efforts and activities. This dialogue has influenced the development of the ideas. It has contributed to ensuring that the ideas selected supplement the activities related to preventing disease and promoting health that are in demand and that are needed within the health care system.

In addition, the first five subprojects (self-management, disease prevention and health promotion in general practice, systematic services for the early detection of COPD, systematic comprehensive cardiac rehabilitation and efforts to prevent falls and bone fractures among elderly people) were selected based on the following criteria.

- The subprojects cover four diseases and disorders. Type 2 diabetes is not intended to be a separate subproject, since an action plan for diabetes to which the National Board of Health has contributed was prepared parallel to the work of the Project Group.
- The subproject ideas include the work that is carried out across the primary and secondary health care sectors and include primary, secondary and tertiary prevention. The subprojects cover the following parts of the life-course: healthy people at elevated risk of illness and ill people.
- The ideas build further on central concepts that are being discussed broadly in Denmark's health care system, including shared care, case management, self-management and examining critical pathways to integrated care.
- The main role of the National Board of Health in the subprojects is to provide documentation, to advise and to initiate.

The last four subprojects (musculoskeletal disorders, a national strategy for early detection and preventive treatment of hypersensitivity disorders, physical activity in hospitals and incorporating physical inactivity and inadequate diet as risk factors for illness in patient registration) are related to disease categories that are very complex and comprise numerous diseases and disorders. The Project Group therefore decided to delimit the focus based on the following criteria:

- known risk factors for illness that can be modified;
- prevalence;
- severity in relation to health and the quality of life;
- macroeconomic burden;
- the actors within the health care system; and
- existing or potential partners to engage in developing ideas and later implementation.

These subprojects were further chosen based on the following criteria:

- including the newest knowledge on methods so that the National Board of Health can be up to date on developments;
- the potential to implement subprojects within the current organizational framework;
- including new target groups that have not previously been in focus, such as psychiatric patients;
- following up previous projects, reports and the like from the National Board of Health, such as those related to hypersensitivity disorders;
- developing methods that can be transferred to other major preventable diseases and disorders, such as patients educating other patients; and
- maintaining the main role of the National Board of Health in the subprojects as facilitating, initiating, coordinating and providing documentation.

The problems related to preventable cancer have been presented to the Cancer Steering Group of the National Board of Health. Several initiatives were suggested related to the risk factors tobacco smoking, physical inactivity and inadequate diet, including special initiatives within primary prevention. These risk factors are relevant in relation to several of the major preventable diseases and disorders and are included in the intersectoral subprojects proposals.

2 Descriptions of the subprojects

This section outlines excerpts from the descriptions of the nine subprojects of the Project on Major Preventable Diseases and Disorders.

2.1 Subproject 1: Self-management – documentation

2.1.1 Background

People who have one of the major preventable diseases and disorders are in direct contact with the health care system for treatment in some periods. In other periods, they are not being treated directly. Nevertheless, illness influences patients' lives when they are receiving health care and when they are not. The significance of people's own efforts is therefore especially clear in connection with these diseases and disorders.

People's own efforts in relation to the diseases and disorders include their lifestyle-related behaviour (diet, physical in activity, smoking habits and other types), their active participation in treatment and their general self-management.

The activities in which people engage to improve their health when they are ill are called self-management. Self-management is often considered to be an important aspect of preventing the progression of illness and complications related to the major preventable diseases and disorders.

In practice, several methods can be used to promote, increase or improve the quality of self-management, such as patient education, self-help material, motivational counselling and advice. The methods may be used in various organizational contexts, such as in the home, in general practice, in patient schools, at hospitals and in municipal home care.

This subproject is working systematically across the major preventable diseases and disorders and across organizational contexts on the concept of self-management and on methods of approaching self-management.

2.1.2 Purpose

The purpose of the subproject is to contribute to working with self-management systematically and based on evidence in preventing disease and promoting health.

2.1.3 Objectives

The objectives of the subproject, in interaction with the other subprojects of the National Board of Health related to the major preventable diseases and disorders, are:

- to outline more precisely the concept and phenomenon of self-management; and
- to disseminate knowledge on self-management to relevant groups of professionals and professional circles.

2.1.4 Targets

The targets of this subproject are:

1. to conduct a literature-based review of the concept of self-management;
2. to conduct three literature-based reviews of methods that can contribute to self-management: patient schools, lifestyle consultations in general practice and home visits;
3. to hold a symposium on 9 December 2004 with high-quality presentations

- on the research, methods and practice related to self-management; and
4. to publish an anthology based on the general review of the concept of self-management, the three reviews of methods and the other conference material and three descriptions in the catalogue of methods on the Web site of the National Board of Health (www.sst.dk).

2.2 Subproject 2: Preventing disease and promoting health in general practice – materials, education and training

2.2.1 Background

A key prerequisite for preventing the major preventable diseases and disorders is that general practices are aware of early detection and the relevant potential for preventing disease in their daily work.

The Danish Society of General Practitioners signed a new national collective agreement with Denmark's Health Care Reimbursement Scheme in autumn 2002 that entered into force in April 2003. The agreement includes new provisions on the use of employees. Many general practitioners employ various forms of staff. The most common types are office workers and nurses, but other professions are represented. According to the agreement, the staff may carry out consultation tasks based on delegated responsibility (oral and written instructions).

Reinforcing the efforts to combat the eight major preventable diseases and disorders requires focusing on early detection and investigation, including counselling on lifestyle and other forms of patient counselling and education as well as follow-up parallel to pharmaceutical treatment in some cases. The general practitioners carry out these tasks but may delegate some of the tasks to employees to varying extents. Tasks include monitoring weight, dietary counselling, smoking cessation counselling, preventing falls, promoting physical activity and motivational counselling related to asthma and type 2 diabetes.

The tools used to prevent the major preventable diseases and disorders and to detect them early are well developed and well known, but general practices differ vastly in how they work with early detection and disease prevention.

General practice should focus further on lifestyle counselling and other types of patient counselling and education and follow-up parallel to pharmaceutical treatment. The implementation of disease prevention in daily work procedures should be supported by several good examples.

2.2.2 Purpose

The purpose of the subproject is to get general practitioners and other general practice staff to work systematically in preventing the major preventable diseases and disorders.

2.2.3 Targets

The targets of this subproject are:

1. to deliver a report that analyses the need for the functions carried out by general practice staff and general practitioners in preventing selected major preventable diseases and disorders;
2. to deliver a report that compares the newest research-based knowledge on health-promoting lifestyle counselling in general practice;
3. to prepare and disseminate printed inspirational material that includes good examples of measures to prevent disease and promote health in general practice;
4. to prepare a plan for and to implement 3–6 regional meetings held after

- work for general practice staff related to disease prevention in general practice in cooperation with the regional quality development committees and the regional continuing education groups based on the inspirational material;
5. to prepare patient-oriented material related to the eight major preventable diseases and disorders; and
 6. to prepare a plan for improving the qualifications of general practice staff.

2.3 Subproject 3: National recommendations for the early detection of chronic obstructive pulmonary disease and for pulmonary rehabilitation – guidelines and manuals

2.3.1 Background

About 200,000 people have COPD in Denmark. This disease comprises a chronic state of infection in the respiratory passages and lung tissue that results in increasing obstruction of the bronchial air flow and gradual decline in lung functioning. The symptoms include breathlessness, coughing and expectoration. COPD is defined solely by the degree of reduction of lung functioning,¹ and diagnosing COPD therefore requires measuring this through spirometry.

Tobacco smoking causes up to 85–90% of the cases of COPD, and 15–25% of smokers develop COPD. Some cases are caused by congenital lung diseases and occupational exposure to respiratory irritants (coal dust, cement dust, grain dust and other forms of dust) or a combination thereof.

COPD develops gradually, and people who have COPD often contact their physician when it has progressed considerably. A total of 13,000 COPD patients account for 23,000 annual acute admissions to departments of internal medicine. COPD patients often have long stays in hospital when admitted, and many are readmitted shortly after discharge. The readmission rate is about 24% within 30 days. The mortality rate from COPD is generally increasing in Denmark, especially among women, who have the world's highest mortality rate from COPD. The number of hospital admissions is also rising. The probable reasons are the high prevalence of smoking among women in Denmark and the fact that women are generally more sensitive to tobacco smoke than men.

Although many general practices can now test lung functioning, this is not systematically carried out among people at elevated risk of developing COPD. Similarly, hospitals in Denmark do not currently systematically offer pulmonary rehabilitation; they lack uniform guidelines for the content of such rehabilitation and descriptions of options (models) for organizing this. The current rehabilitation services are few and sporadic.

The early detection of COPD in general practice consultations and implementing nationwide pulmonary rehabilitation services therefore offer great potential in preventing COPD.

The subproject is based on a report by the Danish Network of Health Promoting Hospitals on the pulmonary rehabilitation of patients with COPD² and a conference on COPD held in collaboration between the Danish Lung Association, the Danish

1 COPD is considered to be present when the volume of air that can be breathed out in the first second (forced expiratory volume in 1 second (FEV1)) is less than 70% of the entire volume that can be breathed out (forced vital capacity (FVC)).

2 Rehabilitering af patienter med kronisk obstruktiv lungesygdom. Fakta, definition og anbefalinger [Rehabilitation of patients with chronic obstructive pulmonary disease. Facts, definitions and recommendations]. Copenhagen, Danish Network of Health Promoting Hospitals, 2004.

Society of Respiratory Medicine and Denmark's Ministry of the Interior and Health in September 2003.

2.3.2 Purpose

To strengthen the efforts to prevent COPD and to rehabilitate patients with COPD.

2.3.3 Objectives

The objectives of this subproject are:

- to get general practitioners to carry out early detection of COPD among individuals at elevated risk; and
- to make systematic pulmonary rehabilitation services a standard part of the treatment regimen for COPD patients in Denmark.

2.3.4 Targets

The targets of this subproject are:

1. to prepare national guidelines on preventing COPD and on pulmonary rehabilitation and to disseminate them to health care managers, administrators and decision-makers and to practitioners;
2. to describe the procedures of general practices in the early detection of COPD and pulmonary rehabilitation, including referring patients to local smoking cessation programmes and any other rehabilitation services;
3. to describe and disseminate various models for organizing pulmonary rehabilitation, emphasizing the critical pathways to integrated care during the entire course of illness and the cooperation between the primary and secondary health care sectors; and
4. to prepare differentiated manuals for detecting COPD and for rehabilitating COPD patients and to disseminate them to the health care professionals who work with COPD.

2.4 Subproject 4: Systematic comprehensive cardiac rehabilitation – guidelines

2.4.1 Background

Scientific evidence shows that rehabilitating patients with heart disease who have undergone surgical and/or pharmaceutical treatment positively affects cardiovascular mortality, the number of cardiac events, the quality of life and psychosocial functioning as well as several modifiable risk factors for heart disease.

Each year about 10,000 people in Denmark experience myocardial infarction, and about 200,000 people are living with arteriosclerotic heart disease. In 2000, the Danish Network of Health Promoting Hospitals investigated the extent to which hospitals in Denmark offer cardiac rehabilitation. Of the 53 hospitals responding, 57% of the patients were offered all the elements of comprehensive cardiac rehabilitation in phase I.³ Forty-seven percent of patients were offered all elements in phase II but only 3% all elements in phase III. Some of the remaining patients were offered some elements of cardiac rehabilitation.

An interdisciplinary working group under the Danish Network of Health Promoting Hospitals with the participation of representatives from the hospitals participating in the Network, the Danish Society of Cardiology and the Danish Heart Foun-

³ The European Society of Cardiology has divided cardiac rehabilitation into three phases. Phase I comprises acute treatment during admission (usually 5 days at most). Phase II is early intensive cardiac rehabilitation on an outpatient basis: between discharge and when the patient is able to manage independently (usually 8–12 weeks). Phase III is the late maintenance and follow-up phase (with no defined time frame).

dation published a report (in Danish) on cardiac rehabilitation at hospitals in Denmark. The publication is a proposal for systematically implementing comprehensive cardiac rehabilitation at hospitals in Denmark.

Evidence from several countries shows that comprehensive cardiac rehabilitation is cost-effective, since it reduces the need for readmission during the course of heart disease. The phase II comprehensive cardiac rehabilitation programme at Bispebjerg Hospital in Copenhagen costs an estimated €800 per patient and reduces the readmission rate by about 30%.

The Center for Health Technology Assessment of the National Board of Health financially supported the collection of data from 1999 to 2000 in a large comprehensive cardiac rehabilitation programme at Bispebjerg Hospital. Denmark's National Institute of Public Health is currently conducting a health technology assessment of hospital-based comprehensive cardiac rehabilitation based on these data with support from state funds allocated to the National Board of Health to support health technology assessment. These funds are also supporting a project in Copenhagen County that is comparing three strategies for cardiac rehabilitation.

National Board of Health is therefore following up on the existing work and thereby contributing to offering comprehensive cardiac rehabilitation to all patients admitted to hospital with heart disease in Denmark based on evidence of effect and a high professional level. The experience gained can be transferred to the efforts to rehabilitate patients with several other chronic diseases and disorders, since many of the elements used in cardiac rehabilitation as well as the organizational framework are identical.

2.4.2 Purpose

The purpose of the subproject is to ensure that all patients with heart disease in Denmark are systematically offered comprehensive cardiac rehabilitation.

2.4.3 Targets

The targets of this subproject are:

1. to ensure that the guidelines and recommendations on comprehensive cardiac rehabilitation are prepared and disseminated to politicians, civil servants, health care managers and practitioners;
2. to contribute to a conference on cardiac rehabilitation; and
3. to emphasize the significance of cardiac rehabilitation at seminars intended to support the implementation of rehabilitating patients with chronic diseases.

2.5 Subproject 5: National recommendations to prevent falls and bone fractures among elderly people – guidelines

2.5.1 Background

“*Healthy throughout Life*” poses the collective challenge of creating “coherence in initiatives to prevent home and leisure accidents, including extending efforts to prevent falling accidents among elderly people”.

Nearly all elderly people have osteoporosis severe enough that falling may fracture bones. The incidence of bone fractures among elderly people can probably be reduced by reducing the risk of falling. Several factors are associated with an increased risk of osteoporotic fractures.⁴ These include low weight, early low-energy bone fractures, physical inactivity, inadequate diet, tobacco smoking and excessive alcohol consumption. All these risk factors can be modified.

Falling accidents are the most frequent type of accident among elderly people, since one third of the people over 65 years fall once or more annually. Nevertheless, not all these people are treated at a hospital. The effects of falling, including death, hospital admission and permanent reduction of mobility, increase exponentially with age.

According to the Injury Registry of the National Institute of Public Health, the number of contacts with accident and emergency departments because of falls among people older than 65 years has increased since 1990, and 65–90% of the contacts with accident and emergency departments are related to falls. The fall has resulted in hip fracture in 37–63% of the fall-related contacts with accident and emergency departments. The risk that a fall will result in bone fracture increases with age. People older than 65 years account for 55% of the total hospital bed-days resulting from accidents. Of people older than 65 years who consult an accident and emergency department after a fall, 39% are admitted and 61% are treated and sent home. Half of those sent home are not followed up.

The risk of further falls increases after contact with an accident and emergency department, but not all hospitals systematically prevent falls. Preparing guidelines and recommendations for preventing falls is therefore considered to have great potential for promoting health.

This subproject is limited to efforts by hospitals. Primary health care and municipal health care are aware of this challenge. The Danish College of General Practitioners published clinical guidelines in 2002.⁵

2.5.2 Purpose

The purpose of the subproject is:

- to promote for preventing falls at hospitals for people who attend an accident and emergency department or are admitted to hospital after a fall.

4 Osteoporose – forebyggelse, diagnostik og behandling [Osteoporosis – prevention, diagnosis and treatment]. Copenhagen, National Board of Health and Danish Veterinary and Food Agency, 2000.

5 Klinisk vejledning. Osteoporose i almen praksis [Clinical guidelines. Osteoporosis in general practice]. Copenhagen, Danish College of General Practitioners, 2002.

2.5.3 Targets

The targets of the subproject are:

1. to develop guidelines and recommendations for hospitals on the systematic investigation and prevention of falls; and
2. to disseminate guidelines and recommendations to leading health professionals and clinicians at hospitals.

2.6 Subproject 6: Musculoskeletal disorders

2.6.1 Background

A target for public health policy of *Healthy throughout Life* is to reduce the number of new cases of musculoskeletal disorders and to prevent the exclusion from the labour market caused by musculoskeletal disorders.

Musculoskeletal disorders are one of the most common causes of sickness absence and the second most frequent reason for health-related anticipatory pension. The 2000 Danish Health and Morbidity Survey conducted by the National Institute of Public Health found that about one fourth of the population had pain or discomfort in the shoulder or neck, back or loin (lower back) or arms, hands, knees, hips or joints within the past 14 days.

Musculoskeletal disorders include a broad spectrum of disorders, ranging from pain in muscles and joints to more well-defined conditions such as a herniated spinal disc or osteoarthritis and polyarthritis. Osteoporosis is considered to be a separate major preventable disease or disorder that requires a specific plan.

The federations of employers and trade unions in Denmark have implemented numerous measures throughout the years, and targeted efforts have been made to increase physical activity. It is increasingly being recognized that the ability of individuals to manage symptoms and carry out the activities of daily living, including work, despite musculoskeletal disorders is decisive and that the health care system, in partnership with patients, can support and develop these abilities through education and information.

Denmark has experience in such fields as back schools, and evidence from outside Denmark indicates that individuals' ability to self-manage illness can be improved by educating them on how to manage the illness. Patient schools often conduct education in groups of patients with a specific disease or disorder or groups of diseases or disorders, and the teachers are health care professionals.

Associations of patients and other groups have supported the creation of self-help groups, since people with a chronic disease or disorder obtain personal experience in how the disease or disorder and its symptoms and treatment affect their daily lives and since sharing experience can be valuable for people with the same disease or disorder.

Structured education programmes in self-management that patients lead and implement have been shown to have value. A randomized controlled trial of the effect of such an educational programme for patients with arthritis showed that it led to improved self-management, more physical activity and less health care utilization.⁶

The Stanford Patient Education Research Center of Stanford University (<http://patienteducation.stanford.edu/programs/cdsmp.html>) has developed and documented the effects of programmes directed mainly towards patients with ar-

⁶ Lorig KR, Ritter P, Stewart AL, Sobel DS, Brown BW Jr, Bandura A et al. Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Med Care* 2001; 39: 1217–23. National Board of Health Project on Major noncommunicable Diseases, Summary

thritis. The education is structured and is led by volunteer patients who have received special training and are supported by manuals and educational material. This approach is now used in many countries, including Norway. It was introduced in England in 2001, where it has been developed in a partnership between the National Health Service, patient organizations and patients entitled the expert patient.⁷

Experience shows that patients become very engaged but that physicians and nurses are sceptical towards this approach, since they expect that well-informed patients will require more time and information.⁸ In contrast, experience in the United States shows that improving knowledge about diseases and disorders and how they best can be managed leads to reduced health care utilization. Based on the documented effect, it is appropriate to attempt to implement this approach in Denmark for patients with musculoskeletal disorders and, depending on the experience gained from this, to disseminate it further to patients with other chronic illnesses.

2.6.2 Purpose

The purpose of this subproject is:

- to test new educational programmes that can be applied to other chronic diseases and disorders in which patients with chronic diseases or disorders take on the role of educating fellow patients; and
- to bolster patients with musculoskeletal disorders so that they can improve self-management, which enables them to maintain the activities of daily living as much as possible and, for certain groups, to retain their ability to work and avoid exclusion from the labour market.

2.6.3 Targets

The targets of this subproject are:

1. to prepare programmes and manuals for education; and
2. to implement a programme in cooperation with relevant partners and to evaluate the effects and costs subsequently.

2.7 Subproject 7: National strategy for the early detection and preventive treatment of hypersensitivity disorders

2.7.1 Background

Hypersensitivity disorders produce symptoms of hypersensitivity⁹ that are either allergic or non-allergic in nature. The symptoms arise after exposure to numerous environmental factors and reflect where in or on the body the hypersensitivity reaction occurs. The respiratory disorders asthma, seasonal allergic rhinitis (hayfever) and nonseasonal (perennial) allergic rhinitis affect the respiratory mucous membranes; food hypersensitivity occurs in the digestive tract; and atopic dermatitis, urticaria and contact eczema affect the skin. Allergic disorders involve immune mechanisms, including immunoglobulin E-mediated allergy symptoms such as allergic asthma, seasonal and nonseasonal allergic rhinitis and food allergy or cell-mediated allergic disorders: allergic contact eczema, coeliac disease and others. Many population surveys do not distinguish between allergic and non-allergic mechanisms and report the total prevalence of each hypersensitivity disorder.

The prevalence of hypersensitivity disorders is reported to be increasing everywhere in industrialized countries: from about 1% in the 1950s to more than 20% today,

7 Department of Health. The expert patient: a new approach to chronic disease management in the 21st century. London: The Stationery Office, 2001.

8 Shaw J, Baker M. "Expert patient" – dream or nightmare? *BMJ* 2004; 328: 723–4.

9 Hypersensitivity means an elevated tendency to react to several different but not necessarily harmful types of environmental exposure that do not result in symptoms among a majority of the population.

although varying considerably according to country and region. Some of this increase probably results from the increased focus on these disorders and changes in diagnostic practice. Nationwide data in Denmark on hypersensitivity disorders are limited to self-reported data from the Danish Health and Morbidity Survey of the National Institute of Public Health. Thus, in 2000 more than one quarter of adult respondents reported having one or more hypersensitivity disorder during the past year, including both allergic and non-allergic hypersensitivity. One fifth of adults had either asthma and/or seasonal and nonseasonal allergic rhinitis in the past year, twice the percentage in 1987. About 5–7% of children have asthma, either as asthmatic bronchitis or asthma. This makes asthma the most common chronic illness among children in Denmark. The prevalence is higher among boys before puberty, but from early puberty the prevalence is higher among girls and then women. About one fifth of children have atopic dermatitis, nearly four times the proportion in the 1960s. About one fifth of adults have contact allergy to one or more chemical substances and are at elevated risk of developing contact eczema, which is the most frequently recognized occupational illness in Denmark. Hypersensitivity disorders may also require considerable medicine. The cost of medicine to treat adults with asthma in Denmark thus amounted to about €102 million in 2000.

People with hypersensitivity disorders vary substantially in the degree of chronic reduction of functioning and in high or relatively low utilization of health care from general practitioners and the rest of the health care system. Many of these disorders can be diagnosed and treated in primary care, and treatment opportunities are so advanced today that few patients need to be admitted to hospital.¹⁰ This means that the registries maintained by the National Board of Health do not have any information on the prevalence of individual disorders, since primary health care does not yet systematically register diseases and disorders. In addition, secondary health care (paediatrics, pulmonology, dermatology, occupational and environmental medicine, otorhinolaryngology and other specialties) often conducts any supplementary investigation and diagnosis that may be necessary depending on the presentation of the disorder.

Evidence shows that early detection combined with early investigation of the disorders by specialists in allergology, initiating preventive pharmaceutical treatment and environmental measures have positive effects – somewhat on the course of illness but especially on the current functional state and the quality of life in general. This can thereby potentially reduce direct and indirect public and private costs.

¹⁰ This does not include the relatively many infants who are admitted for asthmatic bronchitis, an asthma-like condition normally triggered by viral infection and exacerbated by passive smoking. About one third of the children who have recurring asthmatic bronchitis are later diagnosed as having asthma.

2.7.2 Purpose

The purpose of the subproject is:

- to strengthen and ensure the early detection, preventive treatment and rehabilitation of people with hypersensitivity disorders in the health care system, focusing on general practice and intersectoral collaboration.

2.7.3 Objectives

The objectives of the subproject are:

1. to describe and present targets for the quality of the content and organization of the basic and expert levels of clinical knowledge of hypersensitivity disorders; and
2. to determine more precisely the potential for preventing hypersensitivity disorders, especially in primary health care, including describing a formalized educational programme for general practice.

2.7.4 Targets

The following will be accomplished during the subproject:

1. getting relevant scientific societies to prepare clinical guidelines for preventing and treating hypersensitivity disorders;¹¹
2. conducting a survey of activity, including describing the potential for preventing the most frequent hypersensitivity disorders (asthma, seasonal rhinitis and eczema) in general practice, related to prevalence, diagnosis, prevention and treatment, follow-up and intersectoral forms of cooperation;
3. preparing national guidelines for preventing and treating hypersensitivity disorders, including selecting indicators that can monitor progress;
4. describing various models for organizing the prevention of hypersensitivity disorders, emphasizing the critical pathways to integrated care during the entire course of illness and the cooperation between primary and secondary health care; and
5. summarizing the experience from a systematic educational programme on hypersensitivity disorders in general practice.

2.8 Subproject 8: Physical activity in hospitals – pilot projects at hospital departments of psychiatry

2.8.1 Background

Evidence indicates that physical activity prevents and complements the treatment of many chronic diseases and disorders, including most of the eight major preventable diseases and disorders given priority in *Healthy throughout Life*. In addition to the specific effects within each group of diseases and disorders, the general health-promoting benefits of activity and exercise have also been studied. Exercise provides a feeling of general well-being and good mood, strengthens the musculoskeletal system, leads to a higher degree of independence and self-esteem, regulates appetite and strengthens social networks, which can also have a destigmatizing effect for people with mental disorders. Further, physical activity prevents lifestyle-related diseases and disorders for which people with a major preventable disease or disorder are at elevated risk if they are not physically active.

Among people with mental disorders, some evidence indicates that physical exercise has a positive effect in supplementing or replacing pharmaceutical treatment of

¹¹ The tentative specialties to be included are pulmonology, paediatrics, dermatology, otolaryngology, internal medicine and occupational and environmental medicine.

mild and moderately severe depression. In addition, people with certain mental disorders have an excess prevalence of obesity and type 2 diabetes and excess mortality from cardiovascular diseases. The reasons include lack of physical activity, inappropriate diet, smoking habits and the side-effects of medicine. Psychiatric inpatients have longer hospital stays than other inpatients, and this makes it even more important to maintain and expand meaningful and appropriate patterns of activity.

The Danish Psychiatric Association and the Danish Mental Health Fund want to increase the focus on physical activity as primary treatment or as a general health-promoting measure among people with mental disorders. The subproject will thus meet this desire among these stakeholders.

National Board of Health has entered into an agreement with Rigshospitalet (National University Hospital) on preparing model projects on physical activity in preventing and treating the eight major preventable diseases and disorders, including mental disorders. A research project on how endurance exercise affects depression is being initiated at the end of 2004 in cooperation between Bispebjerg Hospital and Rigshospitalet in Copenhagen and the City of Copenhagen. Finally, a review of methods related to exercise prescribed by health care professionals will provide the basis for improving the quality of the use of physical activity as treatment in both primary and secondary health care.

Nevertheless, experience is lacking on systematic implementation of physical activity in secondary health care. The subproject therefore has a dual purpose: to reinforce the focus on lifestyles and risk factors for illness, especially physical activity, among people with mental disorders and to develop methods for systematically implementing physical activity as a priority area elsewhere in hospitals. Even though people with mental disorders differ from other groups of patients in certain ways, there is still common transferable experience related to educating and motivating personnel, forms of organization, tools and monitoring progress.

2.8.2 Purpose

The purposes of the subproject are:

- to strengthen the use of physical activity in efforts to prevent and treat mental disorders among psychiatric patients; and
- to obtain experience with systematic efforts related to physical activity offered in departments of psychiatry as a model for implementing physical activity in all hospitals.

2.8.3 Targets

The following will be accomplished during the subproject:

1. developing tools to be used to assess and organize the physical activity of psychiatric inpatients;
2. developing tools to be used in preparing follow-up plans for physical activity after discharge;
3. obtaining experience from the creation of opportunities for implementing physical activity in pilot departments of psychiatry;
4. developing a set of indicators to be used for monitoring and evaluating progress; and
5. preparing an evaluation report with experience from the pilot efforts that focuses on prerequisites, effects, organization, costs and transferability.

2.9 Subproject 9: Including physical inactivity and inadequate diet as risk factors for illness in patient registration

2.9.1 Background

Evidence shows that physical exercise and a good diet prevent and should be included in treating many chronic diseases and disorders, including most of the eight major preventable diseases and disorders given priority in *Healthy throughout Life*. Exercise and diet have specific effects within each group of diseases or disorders, but evidence also indicates general health benefits: shorter hospital stays, feelings of general well-being and good mood, strengthening the musculoskeletal system and a higher degree of independence and regulation of appetite. In addition, physical activity and appropriate diet prevent the lifestyle-related diseases and disorders for which people with a major preventable disease or disorder are also at elevated risk if they are physically inactive and have an inadequate diet.

Achieving the necessary breakthroughs in efforts within the health care system to tackle the risk factors for illness of physical inactivity and an inadequate diet requires developing this field with structured nationwide information for patients similar to other risk factors such as alcohol and tobacco consumption. Similarly, standardized registration needs to be implemented in the Health Care Service Classification System used in the National Patient Registry for monitoring, including diagnosis-related groups to document the efforts and make them visible.

The Health Economics Division of the National Board of Health has planned a time study of codes for disease prevention and health promotion, including physical activity and diet, which can create a basis for further efforts.

This subproject will draw on the preliminary experience with including the risk factors of tobacco and alcohol consumption in registering patients.

2.9.2 Purpose

The purposes of the subproject are:

- to strengthen the use of physical activity and a good diet in preventing and treating disease among hospital patients in Denmark; and
- to include physical inactivity and an inadequate diet similarly to other risk factors in record-keeping systems at hospitals, including in registering patients.

2.9.3 Targets

The following will be accomplished during the subproject:

1. developing national standards for structured patient information on the risk factors for illness that include physical inactivity and an inadequate diet; and
2. developing patient registration to include physical inactivity and inadequate diet as risk factors for illness.

3 The status of the subprojects in October 2004

1. Self-management

Four documents are being prepared on the concept of self-management, home health visits as a method of preventing disease, patient schools and lifestyle counselling in general practice. These documentation tasks are underway and will end in the first half of 2005. A national symposium is being held on 9 December 2004 to disseminate the preliminary results.

2. Preventing disease and promoting health in general practice

A working group has been appointed, and a catalogue of ideas is being prepared. A meeting is being held for the regional stakeholders on 4 November 2004 to generate inspiration for holding local meetings to focus on preventing disease and promoting health and the eight major noncommunicable diseases. Further, the production of eight patient-oriented publications has been initiated in cooperation with the Organisation of General Practitioners in Denmark and the Danish College of General Practitioners.

3. Introducing systematic services for the early detection of COPD and rehabilitation of COPD patients

A working group has been appointed. The work in 2004 includes preparing recommendations on the early detection of COPD and on following up and rehabilitating patients with COPD.

4. Systematic comprehensive cardiac rehabilitation

The guidelines were published on 28 October 2004 at a nationwide conference.

5. Measures to prevent falls and bone fractures among elderly people

The working group has been appointed. Guidelines are being prepared.

6. Musculoskeletal disorders

A partnership has been established between the Danish Rheumatism Association, Copenhagen County and Ribe County on testing the use of patients to educate patients. In addition, the manuals on patient education are being translated into Danish.

7. National strategy for the early detection and preventive treatment of hypersensitivity disorders

Discussions have been initiated with the Research Unit of General Practice of the University of Southern Denmark in Odense on surveying the potential for preventing hypersensitivity disorders in general practice. Support has been pledged to revise a handbook on investigating and treating allergic disorders in general practice.

8. Physical activity in hospitals – pilot projects at hospital departments of psychiatry

The subproject has just been finally approved and is about to be initiated.

9. Including physical inactivity and inadequate diet as risk factors for illness in patient registration

A description of the subproject is being prepared that outlines defined milestones.

4 Descriptions of the critical pathways for public health policy

The critical pathways for public health policy have been described for each of the eight major preventable diseases and disorders. This section presents the description of the critical pathways for public health policy for COPD as an example.

4.1 Description of the critical pathways for public health policy for chronic obstructive pulmonary disease

COPD is characterized by chronic obstruction of bronchial air flow as a result of chronic bronchitis or pulmonary emphysema. The severity of COPD is categorized as mild, moderate or severe depending on the degree of bronchial obstruction. The most important symptoms are breathlessness, coughing and expectoration. Diagnosing COPD therefore requires measuring lung functioning through spirometry.

Tobacco smoking causes 85–90% of the cases of COPD, and 15–25% of smokers develop COPD. Occupational exposure to dust or smoke has much less effect in causing COPD than exposure to tobacco smoke, but the harmful effect of various forms of dust such as coal dust, cement dust, grain dust and dust from other organic material from agriculture seems to be additive to the harmful effect of smoking.

An estimated 200,000 people have some degree of COPD in Denmark: more than 5% of all adults. COPD is the primary cause of about 3500 deaths each year in Denmark and a contributing cause of a further 2200 deaths annually. COPD is one of the top five diseases and disorders in Denmark in terms of health care resources required; COPD patients account for 23,000 admissions to hospital each year, which is 10% of the total acute admissions to Denmark's departments of internal medicine. In addition, COPD accounts for 33,000 outpatient consultations, 5400 visits to an accident and emergency department and many consultations with general practitioners. About 15,000 people have COPD that is severe enough that they are very impaired in daily life; they have an average estimated life expectancy of 5 years.

The number of admissions and deaths resulting from COPD has been increasing, especially among women, who have accounted for the largest proportion of admissions in the last decade. The likely reasons are the high prevalence of tobacco smoking among women in Denmark and women's elevated sensitivity to smoking. The death rates for women and men are identical. The frequency of admission among younger people has declined in the past few years, which could indicate that the declining proportion of smokers in the population has begun to reduce the prevalence. Nevertheless, the number of COPD patients is expected to grow because the number of heavy smokers has increased in the past three to four decades. COPD patients are resource-intensive because they require considerable care and have frequent exacerbation of illness. Many COPD patients also lack resources, since COPD very severely limits the activities of daily living and disproportionately affects groups of people who are very socially vulnerable.

Evidence indicates that systematically offering pulmonary rehabilitation to COPD patients improves their quality of life and level of functioning. In addition to smoking cessation, training muscle strength and endurance and dietary counselling, pulmonary rehabilitation means learning to self-manage illness; one way is through psychosocial support services. Evidence shows that pulmonary rehabilitation reduces the number of physician consultations and acute admissions to hospital among COPD patients.

The relevant strategies for preventing COPD are a mass strategy and a high-risk strategy.

4.1.1 Healthy people without an elevated risk of developing COPD
Tobacco smoking is the predominant risk factor for developing COPD. Primary prevention measures at the population level that attempt to prevent people from starting smoking and encourage smoking cessation or reduction will contribute to preventing a vast majority of COPD cases. The dissemination of smoke-free environments will also help to prevent COPD. This provides the benefit of signalling that smoking has harmful effects, and smoke-free environments simply prevent people from starting to smoke or from smoking as much as they might want to. A smoke-free life is the most important measure to ensure that people do not develop COPD. Nevertheless, COPD cannot be prevented among a certain proportion of the population.

Thus, measures continue to be needed to support informing the public about the harmful effects of tobacco at the National or community level, and perhaps targeting specific population groups or environments and preferably with the involvement of relevant health care professionals. Similarly, legislative measures on smoking are very important.

4.1.2 Healthy people with an elevated risk of developing COPD
COPD develops gradually, and the very slow but continual destruction of the mucous membranes of the lungs by tobacco smoke does not result in substantial symptoms for many years other than a mild cough (smokers' hack), which many smokers consider to be a natural accompaniment to smoking. Smoking cessation is the only proven way to prevent COPD, and all smokers, but especially heavy smokers, are at elevated risk of developing COPD and should be encouraged to stop smoking or be offered smoking cessation counselling during every contact with the health care system. This can take place at general practice consultations, even though the reason for the consultation may be unrelated, but this is even more necessary if the patient shows other signs of tobacco-related symptoms or conditions and should always be done if the patient has respiratory symptoms. The patient's smoking history should thus be a natural part of any consultation. Initiatives to stop or reduce smoking in community environments and at workplaces would also be important for this high-risk group.

In this latent phase, only investigating lung functioning through spirometry can reveal any loss that exceeds the expected age-related reduction. Spirometry should be systematically offered to all smokers older than 40 years. Many general practitioners now have spirometers and should thus be able to offer this service.

4.1.3 Patients diagnosed as having COPD
The symptoms of COPD develop gradually over many years, and many people get used to these symptoms and do not contact a physician until COPD has progressed considerably. COPD is characterized by a gradual loss of lung functioning beginning at about 30 years of age. The first symptoms of COPD often arise when people are 40–60 years old, and about half of lung functioning has been lost at that point. As stated previously, diagnosing COPD requires investigating lung functioning.

Most patients at an early stage of COPD are investigated and treated in general practice. If the physician is not sure of the diagnosis, the patient may be referred to further investigation at a hospital.

The most important measure for COPD patients is trying to motivate them to stop smoking. This may be done in general practice or by referring them to smoking cessation counselling or the like depending on what is offered in their community. Counselling can be supported by nicotine replacement therapy. Supportive pharmaceutical treatment may already be necessary at that point.

4.1.4 Patients who maintain the same level of functioning despite COPD

No current treatment can re-establish destroyed lung tissue. As stated, most patients have lost considerable lung functioning when they are diagnosed, and thus few patients have lung functioning comparable to that of healthy people of the same age. Nevertheless, smoking cessation stops the accelerating loss of lung functioning such that it corresponds to the normal age-related loss and reduces or eliminates cough and expectoration.

Smoking cessation has been documented to improve survival in the long term and is the most important measure for COPD patients.

Primary health care should follow up COPD patients.

Continuing physical activity is very important among COPD patients to prevent the weakening of muscles that often occurs. Breathlessness in connection with exertion produces anxiety, and patients therefore tend to avoid numerous activities. This may result in immobility and reduced physical capacity, causing patients to move into the group with declining functioning.

4.1.5 COPD patients who do not maintain the same level of functioning

The prognosis is grave for patients who continue to smoke, since COPD is exacerbated with continuing reduction of lung functioning and increasing breathlessness as a result. In very severe cases, the lungs function so poorly that the body is continuously starved for oxygen.

This type of patient is usually followed up in general practice but is referred to a hospital when the illness worsens, when the patient has complicated conditions (often heart disease), when oxygen treatment in the home is needed or when the patient needs to be assessed for surgery (removing dead lung tissue so that healthy lung tissue can expand). Many COPD patients with severe illness are admitted to hospital several times a year because the illness worsens acutely, often in connection with infection. A new study of COPD inpatients at three hospital departments of internal medicine in Denmark showed that slightly less than half the patients were readmitted during the subsequent 12 months and more than one third of the patients died.

COPD patients undergo pharmaceutical treatment to improve breathing. Further, surgery is used in some cases. When lung functioning has been reduced considerably, patients may be offered oxygen treatment at home. Some patients are treated with a respirator when they are admitted after the illness worsens. Lungs can be transplanted, but this can only be offered to 20–25 patients per year in Denmark. It is recommended that patients be offered vaccination for influenza and *Pneumococcus* spp. to prevent infections that often result in acute exacerbation of COPD.

Patients with chronic loss of functioning resulting from COPD need early pulmonary rehabilitation when COPD, in addition to substantially worsening the patient's level of functioning, worsens the quality of life or leads to hospital admission. All modern consensus reports on the diagnosis and treatment of COPD in Denmark and elsewhere recommend pulmonary rehabilitation for COPD patients with moderate to severe illness. The purpose of pulmonary rehabilitation is to reduce breath-

lessness, counteract the tendency to be physically inactive and improve physical capacity and mental well-being. Pulmonary rehabilitation should be adapted to the individual patient with COPD after prior assessment and should at least include smoking cessation counselling, exercise training, dietary counselling and psychosocial support, including patient education. An effort should be made to make the pulmonary rehabilitation services in Denmark more uniform. Smoking cessation is still important, and patients undoubtedly need regular medication. Patients with COPD in this stage of illness should receive treatment in seamless cooperation between the patients and their families and general practice, home care and departments of pulmonology and relevant inpatient departments.

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